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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/551,732

10/03/2005

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4329

270 7590 10/06/2008  
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EXAMINER

FOGARTY, CAITLIN ANNE

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

10/06/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/551,732	ODA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	CAITLIN FOGARTY	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-3,7,8 and 13-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,7,8 and 13-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Status of Claims***

1. Claims 1 – 3, 7, 8, and 13 – 30 are pending where claims 17 and 21 are amended and claims 28 – 30 are new.

### ***Status of Previous Rejections***

2. The objection to claims 17 and 21 is withdrawn in view of the amendment filed June 19, 2008.

The 35 U.S.C. 102(b) rejection of claims 8 and 21 – 27 as being anticipated by Zhang (US 6,193,821 B1) is withdrawn in view of the arguments filed June 19, 2008.

The 35 U.S.C. 103(a) rejection of claims 1 – 3, 7, and 13 – 20 as being unpatentable over Zhang (US 6,193,821 B1) in view of Pircher et al. (US 4,994,118) is withdrawn in view of the arguments filed June 19, 2008.

The provisional nonstatutory obviousness-type double patenting rejection of claims 1, 7, and 8 is withdrawn in view of the Terminal Disclaimer filed June 19, 2008.

### ***Priority***

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Rejections - 35 USC § 102***

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claims 1 – 3, 7, and 13 – 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Turner (US 6,331,233).

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With respect to instant claim 1, col. 1 lines 6-12 and col. 3 line 49-col. 4 line 26 of Turner disclose a tantalum sputtering target manufactured by subjecting a molten and cast tantalum ingot to forging, annealing and rolling. Turner differs from instant claim 1 because it does not specifically teach that the tantalum sputtering target has a non-recrystallized structure. However, col. 2 lines 39-63 of Turner teach that the tantalum sputtering target has a homogeneous fine-grain size microstructure with a uniform, predominately {111} texture. Therefore, the tantalum sputtering target of Turner has a predominately non-recrystallized structure. In addition, it would be expected that the tantalum sputtering target of Turner would inherently have a non-recrystallized structure since it is made using a method similar to the method the instant invention. See MPEP 2112.

Turner differs from instant claims 2 and 3 because it does not specifically teach that the non-recrystallized structure of the tantalum sputtering target is 20% or more or 40% or more. However, col. 2 lines 39-63 of Turner teach that the tantalum sputtering target has a homogeneous fine-grain size microstructure with a uniform, predominately {111} texture. Therefore, the tantalum sputtering target of Turner has a predominately non-recrystallized structure which satisfies the limitations of claims 2 and 3. In addition, it would be expected that the tantalum sputtering target of Turner would inherently have a non-recrystallized structure since it is made using a method similar to the method the instant invention. See MPEP 2112.

In regards to instant claim 7, col. 1 lines 6-12 and col. 3 line 49-col. 4 line 26 of Turner teach a method of manufacturing a tantalum sputtering target comprising the

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steps of subjecting a molten and cast tantalum ingot to forging, annealing, and rolling processes and performing plastic working on the ingot. Turner differs from instant claim 7 because it does not specifically teach that the tantalum sputtering target has a non-recrystallized structure. However, col. 2 lines 39-63 of Turner teach that the tantalum sputtering target has a homogeneous fine-grain size microstructure with a uniform, predominately {111} texture. Therefore, the tantalum sputtering target of Turner has a predominately non-recrystallized structure. In addition, it would be expected that the tantalum sputtering target of Turner would inherently have a non-recrystallized structure since it is made using a method similar to the method the instant invention. See MPEP 2112.

Turner differs from instant claims 13-16 because it does not specifically teach the Vickers hardness of the tantalum sputtering target. However, it would be expected that the tantalum sputtering target of Turner would inherently have a Vickers hardness similar to that of the instant sputtering target because it is made using a method similar to the method of making the tantalum sputtering target of the instant invention. See MPEP 2112.

With respect to instant claim 17, col. 3 line 49-col. 4 line 26 of Turner discloses that after plastic working the ingot is subjected to finish processing in order to form a target shape.

In regards to instant claim 18, col. 3 line 49-col. 4 line 26 of Turner teaches that the annealing is recrystallization annealing and that the forging and recrystallization

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annealing processes are repeated three or more times which satisfies the instant claim 18 repetition limitation.

***Claim Rejections - 35 USC § 103***

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 8 and 19 – 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Turner (US 6,331,233).

Turner is applied to instant claim 7 as discussed above in the 35 U.S.C. 102(b) rejection.

Regarding instant claim 8, col. 1 lines 6-12 and col. 3 line 49-col. 4 line 26 of Turner disclose a method of manufacturing a tantalum sputtering target comprising the steps of subjecting a molten and cast tantalum ingot to forging, annealing, and rolling, performing a plastic working process on the ingot, and thereafter annealing the ingot at a temperature of 1500-2800°F (1089-1811 K) which overlaps with the temperature range recited in instant claim 8.

Turner differs from instant claims 19, 23, and 26 because it does not specifically teach that extend forging and upset forging are repeatedly performed on the ingot. However, col. 3 line 49-col. 4 line 26 of Turner teaches that the tantalum ingot is repeatedly forged whereby significant cross-sectional area or thickness reduction takes place. Therefore, it would have been obvious to one of ordinary skill in the art to repeatedly perform extend forging and upset forging on the tantalum ingot because they

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are known types of forging that can achieve significant cross-sectional area or thickness reduction.

In regards to instant claims 20, 24, and 27 col. 3 line 49-col. 4 line 26 of Turner discloses that the recrystallization annealing is performed at a temperature of 1500-2800°F (1089-1811 K) which overlaps with the temperature range recited in instant claims 20, 24, and 27.

With respect to instant claim 21, col. 3 line 49-col. 4 line 26 of Turner teaches that after the plastic working process the ingot or billet is subjected to finish processing to form a target shape.

Regarding instant claims 22 and 25, col. 3 line 49-col. 4 line 26 of Turner teaches that during the step of subjecting the molten and cast tantalum ingot or billet to forging, annealing and rolling, the annealing is recrystallization annealing and the forging and recrystallization annealing processes are repeated three or more times which satisfies the instant claims 22 and 25 repetition limitation.

In regards to instant claim 24, col. 3 line 49-col. 4 line 26 of Turner discloses that the recrystallization annealing is performed at a temperature of 1500-2800°F (1089-1811 K) which overlaps with the temperature range recited in instant claim 24.

Turner differs from instant claim 28 because it does not specifically teach the step of providing the tantalum sputtering target with a non-recrystallized structure. However, col. 2 lines 39-63 of Turner teach that the tantalum sputtering target has a homogeneous fine-grain size microstructure with a uniform, predominately {111} texture. Therefore, the tantalum sputtering target of Turner has a predominately non-

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recrystallized structure. In addition, it would be expected that the tantalum sputtering target of Turner would inherently have a non-recrystallized structure since it is made using a method similar to the method the instant invention. See MPEP 2112.

With respect to instant claim 29, col. 3 line 49-col. 4 line 26 of Turner teaches that the annealing temperature is 1500-2800°F (816-1538°C) which overlaps with the instant claim 29 temperature of 825°C.

Regarding instant claim 30, col. 3 line 49-col. 4 line 26 of Turner discloses that the annealing temperature is 1500-2800°F (816-1538°C) which overlaps with the instant claim 30 temperature range.

Since the claimed temperature ranges of claims 8, 20, 21, 24, 27, 29, and 30 either overlap or are within the ranges disclosed by Turner, a prima facie case of obviousness exists. See MPEP 2144.05. It would have been obvious to one of ordinary skill in the art at the time the invention was made to select the claimed temperature ranges from the temperature ranges disclosed by Turner because Turner teaches the same utility (i.e. a tantalum sputtering target) in the whole disclosed range.

### ***Response to Arguments***

8. Applicant's arguments with respect to claims 1-3, 7-8, and 13-27 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CAITLIN FOGARTY whose telephone number is



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(571)270-3589. The examiner can normally be reached on Monday - Friday 8:00 AM - 5:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/  
Supervisory Patent Examiner, Art  
Unit 1793

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